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ABSTRACT

In the last 15 years much attention has been devoted to the identification and description of varieties (register and style) of language within the same speech community. The Research Section, Directorate of Studies, Staff Development Branch, Public Service Commission of Canada carried out three TESL-oriented linguistic studies on the characteristics of written and spoken English that federal government employees used at work. The first study demonstrated to what extent register exercised constraints on the native speakers' selection of lexical verbs structures in speech and in writing. In this study the lexical verb types of administrative correspondence and boardroom discussion were analyzed. The second project involved a syntactic analysis of 10,000 spoken sentences and over 5,000 written sentences. A tagmemic model analyzed the sentence and its parts in terms of both function and form. The third project analyzed over 130,000 words of spoken English to isolate a range of fixed expressions used for such purposes as capturing attention, holding the floor in conversation, providing encouragement and feedback, and so on. It was hoped that the findings would contribute to more comprehensive course design and more effective teaching. (HOD)

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Looking into the characteristics of
Spoken and Written English:

---A Report on the On-going Applied
Linguistic Projects of the Research
Division, Directorate of Studies,
Staff Development Branch, Public
Service Commission of Canada

by

Rosaline K. Chiu

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In the field of linguistics, there has been much discussion of intra-lingual varieties in the last fifteen years. Much attention has been devoted to the identification and description of varieties of language within the same speech community, and there is a movement towards establishing overt criteria, both linguistic and extra-linguistic, to this end. Among the representative works are Bright, (1966), Bernstein, (1967), Ellis and Ure, (1967), Gregory (1967), and Fishman, (1968, 1971)¹.

Strevens² (1965) has this to say about the English language: "In countries where English is the mother tongue, it is usual for both the general public and those who teach English to talk about the language as if it were a single, identifiable consistent entity. We learn and teach sets of rules (purporting to be 'the grammar of English'), when a relatively small quantity of factual observation should convince us that every rule is consistently broken in one or another set of circumstances, by one or another set of speakers or writers." As he sees it, English, just as any other natural language, exists, not as a single uniform entity, but as a constellation of varieties, each functioning in a particular way. Crystal³ in an article entitled "New Perspectives for Language Study" published in English Language Teaching, 1970, writes "one of the main criticisms that can be justifiably and usefully directed at traditional approaches to English language study is that they are too restricted in scope, too monolithic, to provide an adequate picture of the language. The central issues are nowadays quite familiar; the concentration on written English to the exclusion of spoken, and on formal, literary styles of the language at the expense of the informal and conversational". It is only recently that linguistic approaches to the study of English have begun to do

anything more than pay lip-service to the need for a more comprehensive eclectic account of the language as a whole, and one of the clearest indications of a movement in this direction is the recent efforts in the studies of English in use, focusing on the description and classification of varieties of English according to the user, as well as the varieties of English according to use.

English can be classified and subdivided into dialects according to its users, similarly it can also be classified and subdivided into registers according to the many uses to which it is put.

Language varies as its function varies; it differs in different situations. The label given to a variety of a language according to use is 'register'. When we observe language activity in the various contexts in which it takes place, we find differences in the types of language selected as appropriate to different types of situations. 'Scientific' English is different from 'colloquial' English. And 'religious' English is again different from both. In various degrees, there are correlations between recurrent linguistic features and situational features. As mentioned before many attempts have been made recently to establish conceptual frameworks and theoretical categories of the uses of language to enable better understanding of the functioning of a language in particular situations: who says or writes what, to or for whom, when, in what circumstances, and why? For scholars in the field see that the study of registers, which is quite recent in origin, is crucial to both our understanding of how language works and in application to literary criticism, translation and native and foreign language teaching.

Even though breakthroughs have been made in the establishment of useful theoretical models and categories of register, there has been a lack of substantial analytical data to test the effectiveness of the models and categories. Theoreticians in the field have been aware of this obvious lack and inadequacy. Halliday, McIntosh and Stevens, (1964), write "... up to now we know very little about the various registers of spoken English. Even studies of the written language have only recently begun to be made from the point of view. For this reason we are not yet in a position to talk accurately about registers; there is much work to be done before the concept is capable of detailed application....Very large samples of texts have to be subjected to detailed formal analysis if we wish to show which grammatical or lexical features are common to all uses of the language and which are restricted to, or more frequent in, one or more particular registers."⁴ Ellis and Ure, (1969), write "...in the sheer description of registers of one language, large-scale research using enough text for significant statistics is called for. The development of computer methods in linguistic analysis should make possible the effective application of, and feedback to, variety and especially register theory."⁵ Elsewhere in the same article they write: "...register-based linguistic analysis of texts can equally provide the teacher with a selection of material appropriate to the situational needs of the student, together with a statement of frequency of occurrence and co-occurrence of items and categories."⁶ Crystal and Davy, (1969), state: "We cannot but conclude that stylistic theory, at the time of writing, has reached a stage where it would do well to wait for practical analysis to catch up, so that the theoretical categories may be tested against a wide range of data, and more detailed analysis of text carried out."⁷ Again in 1970, Crystal, who prefers to use the label 'stylistics' to cover the whole complex of varieties and styles that made up 'a' language,

wrote about the importance of stylistic information for English language teaching. He writes: "...it is still rare to find any attempt being made to incorporate it systematically into a course. This is understandable, in view of the absence of any 'dictionary of stylistic features' which the teacher may turn to in order to find out exactly what it is that is idiosyncratically 'scientific' about scientific English, what is 'colloquial' about colloquial English, and so on. The big dictionaries are of some help as far as vocabulary is concerned, in that they very often label restricted lexical usage, but you cannot rely on any consistency here. And grammar books on the whole do not give stylistic information."⁸

Thus, conscious of the current movement towards a more realistic and less monolithic approach to the study of the English language and its manifold implications to the teaching of English as a second language, and responding to the call for practical register-based linguistic analysis, the Research Section formerly of the English Curriculum Division, Language Bureau, and presently under the Directorate of Studies, Staff Development Branch, Public Service Commission, has carried out three TESI-oriented linguistic studies on the characteristics of written and spoken English that federal government employees use at work. I will try to present some highlights of findings of these three on-going projects, which are at different stages of completion.

The first project, which I have briefly reported in The TESOL Quarterly, Vol. 6, No. 2, June, 1972⁹ and The English Quarterly, Vol. 6, No. 2, August, 1973,¹⁰ aims at clarifying the concept of situational constraints on the use of the English language. It attempts to demonstrate to what extent register, the variety of language according to use, exercises constraints

on the native-speakers' selection of lexical verbs and verb structures in speech and in writing.

In the English program of the Language Bureau, one of the teaching targets is to enable French-speaking government employees to function in English at work. A similar program exists to teach English-speaking employees French. Our students will be expected to understand and to write in the register of 'administrative English'. High-ranking public servants will also be expected to participate in topic-oriented discussions in 'official' meetings in the 'formal' atmosphere of the boardroom. Thus, we have looked systematically into the linguistic characteristics and situational constraints of these registers so that suitable teaching materials can be designed.

Here, I would like to highlight some findings of this project. In the Administrative Correspondence corpus of 250,109 running words, the total number of verbs, or what we refer to as lexical verb tokens, is 17,948 while the number of different verbs, lexical verb types, is 1,036. The Boardroom Discussion corpus of 60,216 running words has 8,277 lexical verb tokens and 560 verb types.. For details in the selection and compilation of the corpora, see Chiu (1972, 1973)

	Administrative Correspondence	Boardroom Discussion
Running Words	250,109	60,216
Lexical Verb Tokens (No. of verbs)	17,948	8,277
Lexical Verb Types (No. of Different verbs)	1,036	560

Table 1

In order to find out to what degree native English-speaking public servants choose different sets of verbs to write with and to speak with, a comparison of the lexical verb types of Administrative Correspondence and Boardroom Discussion has been made. The results are displayed in the following diagrams.

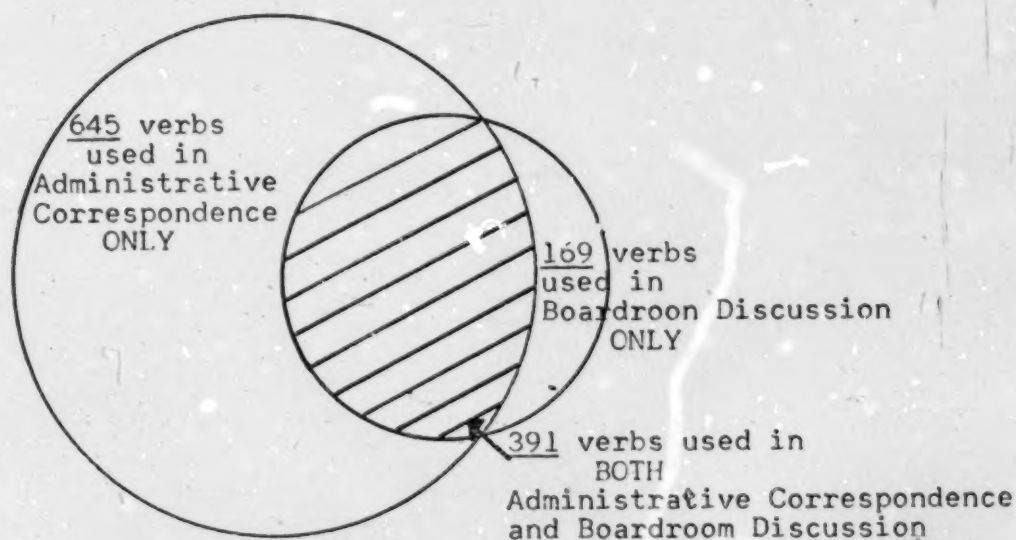


DIAGRAM 2

Of the 1,036 verbs of Administrative Correspondence, 391 of them are also used in Boardroom Discussion while 645 of them are used in Administrative Correspondence only. Of the 560 verbs of Boardroom Discussion apart from the 391 verbs which are in common with those of Administrative Correspondence, the remaining 169 verbs are used in Boardroom Discussion only.

/...7

The same set of information can be represented in another way.

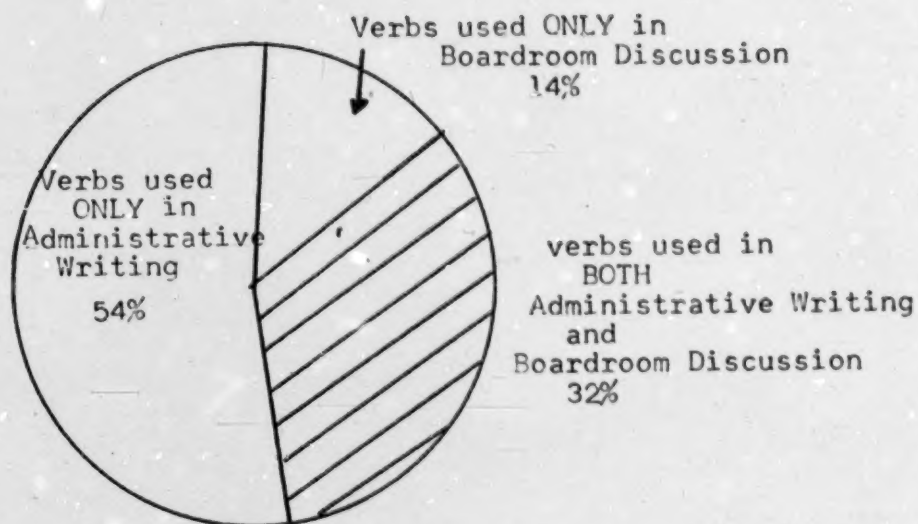


DIAGRAM 3

The results show that native English-speaking public servants do choose different sets of verbs to speak with and to write with. Apart from a 32% 'overlap', 54% of the verbs are used only in writing Administrative Correspondence, and the remaining 14% of the types are used only in the speech of Boardroom discussion. It means that in writing Administrative Correspondence, native speakers resort to greater 'specialization' in the choice of verbs, while speaking in the Boardroom, they rely more on the use of 'common core' verbs.

The following are lists of lexical verbs beginning with the letter 'A', which are used in both Administrative Correspondence

and Boardroom Discussion Corpora, only in Administrative Correspondence Corpus, and only in Boardroom Discussion Corpus respectively:

Lexical Verbs Beginning With The Letter "A"
Common to Administrative Correspondence Corpus and
Boardroom Discussion Corpus

- | | |
|--------------|---------------|
| 1 Absorb | 18 Apply |
| 2 Accept | 19 Appreciate |
| 3 Accomplish | 20 Approach |
| 4 Achieve | 21 Argue |
| 5 Acquiesce | 22 Arise |
| 6 Acquire | 23 Arrange |
| 7 Add | 24 Arrive |
| 8 Admit | 25 Ask |
| 9 Adopt | 26 Assess |
| 10 Advance | 27 Assign |
| 11 Advise | 28 Assist |
| 12 Affect | 29 Associate |
| 13 Afford | 30 Assume |
| 14 Agree | 31 Attach |
| 15 Allow | 32 Attain |
| 16 Answer | 33 Attempt |
| 17 Appear | 34 Attend |

Lexical Verbs Beginning With The Letter "A"
Unique to Administrative Correspondence Corpus
 (Excluding verbs that appeared only once)

- | | |
|---------------|----------------|
| 1 Abandon | 22 Allot |
| 2 Accede | 23 Alter |
| 3 Accompany | 24 Amend |
| 4 Accord | 25 Amount |
| 5 Account | 26 Announce |
| 6 Accrue | 27 Anticipate |
| 7 Accumulate | 28 Apologize |
| 8 Acknowledge | 29 Appoint |
| 9 Acquaint | 30 Approve |
| 10 Act | 31 Approximate |
| 11 Address | 32 Ascertain |
| 12 Adjust | 33 Assemble |
| 13 Administer | 34 Assent |
| 14 Advertise | 35 Assure |
| 15 Aid | 36 Attract |
| 16 Aim | 37 Audit |
| 17 Airmail | 38 Authorize |
| 18 Alert | 39 Average |
| 19 Allege | 40 Avoid |
| 20 Alleviate | 41 Await |
| 21 Allocate | |

Lexical Verbs Beginning With The Letter "A"

Unique to Boardroom Discussion Corpus

(Excluding Verbs That Appeared Only Once)

- 1 Advocate
- 2 Amaze

In our Verb Phrase analysis of the two distinct registers, we have built in a system of cross-reference from lexical information to structural information, and vice versa. From our analysis, we can find out whether or not the lexical

verbs commonly used in both administrative writing and boardroom discussion occur in the same set of verb phrase types, how the verb phrase types are distributed within each register, and how they are marked.¹¹ The pedagogical implications of such findings for teaching English as a second language are manifold; among them, the identification of teaching points most appropriate to the needs of specific groups of students, the sequencing of those teaching points, and the amount of work the teachers and learners allot to each of the teaching points.

Another of our on-going projects is a syntactic analysis of spoken and written English. The spoken corpus consists of over 10,000 sentences of Canadian speech. Our speakers were taped in unscripted and unrehearsed formal and informal situations such as boardroom discussions, public meetings, hot-line programs, etc. The written corpus consists of over 5,000 sentences. It is composed of two parts. The governmental half of our written corpus is a sampling of administrative writing, memoranda, bulletins, annual reports, and other government publications while the non-governmental half is a sampling of editorials, magazine and newspaper articles on government policies published across Canada.

The analytical model adopted is the tagmemic model, as expounded by Kenneth Pike (1967)¹² and as modified by Victor Barbeau who analysed a corpus of spoken and written French for the federal Language Bureau. As shown by the following illustrations, the tagmemic model we use is a multi-level analytical model; and at each level the sentence and its parts are analysed in terms of both function and form.

Illustration 4

B.1.42 What did (you) think of that Frank?

1.1 +SENINTERROG¹³
 /SENSIM

2.1 SENSIM
 +CLIND
 /CLBAS

3.1 CLBAS
 +OD +PRED [+S
 /PRONINTERROG /XVCOMP /PRONP]

+OI +VOC
/PHPREP /NP

What did (you) think of that Frank?

4.1 PHPREP
 +IPP +NUC
 /PREP /PRONDEM
 of that

5.1 XVCOMP
 +AUX +NUC
 /XVAUX /XVIV
 did ... think

5.2 XVAUX 1
 did

5.3 XVIV 1
 think

Illustration 5A.2.2 We're going to be talking about various aspects
 of language teaching and language learning.

1.1 +SENDECL¹⁴
 /SENSIM

2.1 SENSIM
 +CLIND
 /CLBAS

3.1 CLBAS
 +S +PRED +OI
 /PRONP /PHV /PHPREP

We're going to be talking about various aspects of
language teaching and language learning.

/...12

- 4.1 PHV
 +SAUX +NUC
 /XVSAUXCOMP /XVCOMP
 're going to be talking
- 4.2 PHPREP
 +IPP +NUC
 /PREP /PHN
 about various aspects of language teaching and
 language learning
- 4.3 PHN
 +QUAL +NUC +QUAL
 /ADJIND /N /PHPREP
 Various aspects of language teaching and language
 learning.
- 4.4 PHPREP
 +IPP +NUC +CORR +NUC
 /PREP /PHN /CONJCOORD /PHN
 of language teaching and language learning
- 4.5 PHN
 +QUAL +NUC
 /N /N
 language teaching
- 4.6 PHN
 +QUAL +NUC
 /N /N
 language learning
- 5.1 XVSAUXCOMP
 +AUX +NUC
 /XVAUX /XVSAUX
 're going to
- 5.2 XVAUX 1
 're
- 5.3 XVSAUX 2
 going to
- 5.4 XVCOMP
 +AUX +NUC
 /XVAUX /XVII
 be talking
- 5.5 XVAUX 1
 be
- 5.6 XVII 2
 talking

The analysis of this project has been done manually, and the data processing is being done by computer¹⁵. When completed, the study will provide computerized data which, among other practical applications, can be used for a comparative and constrastive study of spoken and written English at each of the five levels. The analysis will provide an ordering of syntactic structures from the simple to the complex. It will yield information on frequency of occurrence of various structures, and an inventory of examples of each structure. From a mini-corpus of 50 spoken English sentences, we have obtained the following quantitative and distributional information on sentence functions and sentence forms.

Distribution of Sentence Functions in a
Corpus of 50 Spoken Sentences

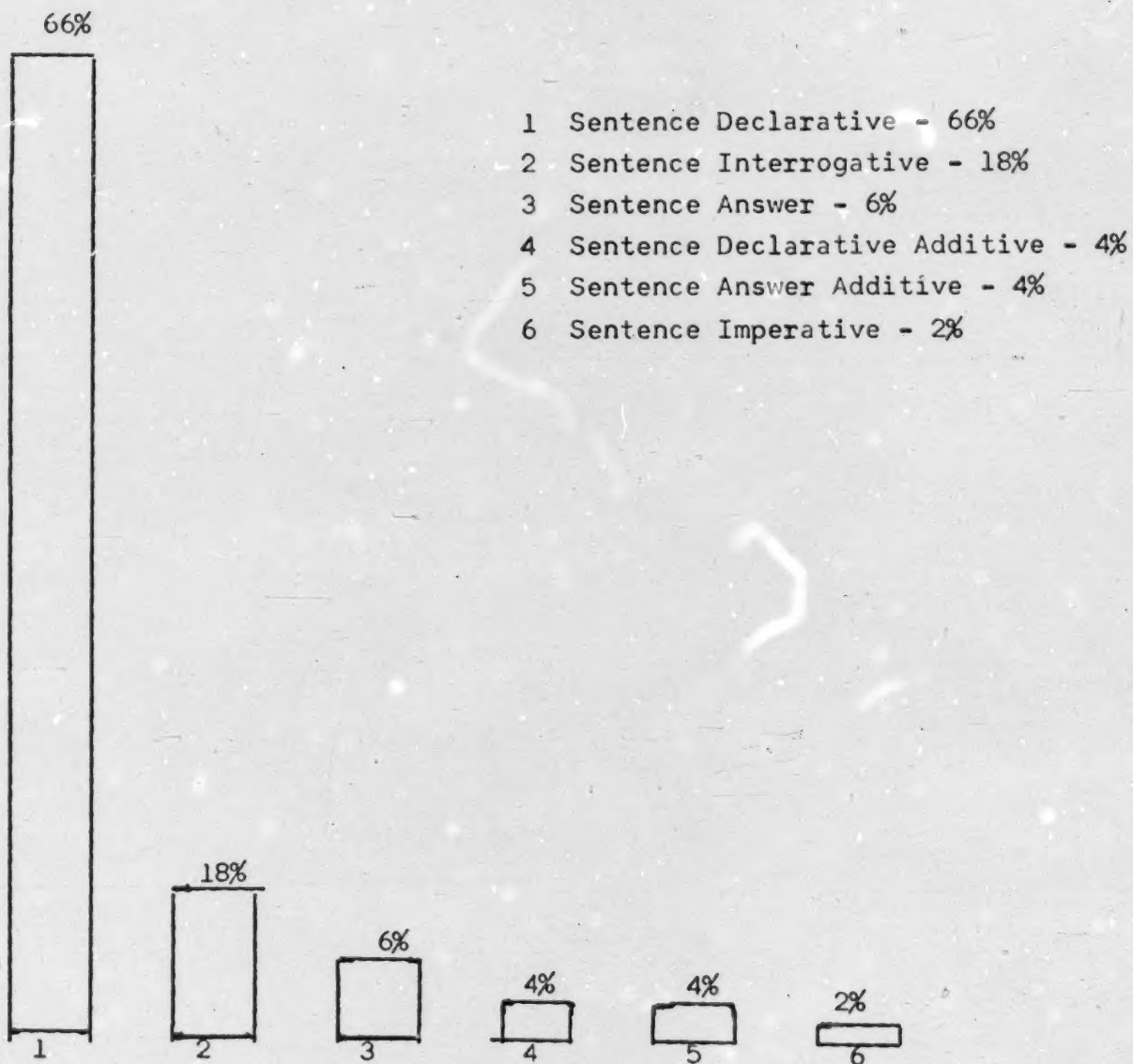


Diagram 6

Distribution of Sentence Forms in a
Corpus of 50 Spoken Sentences

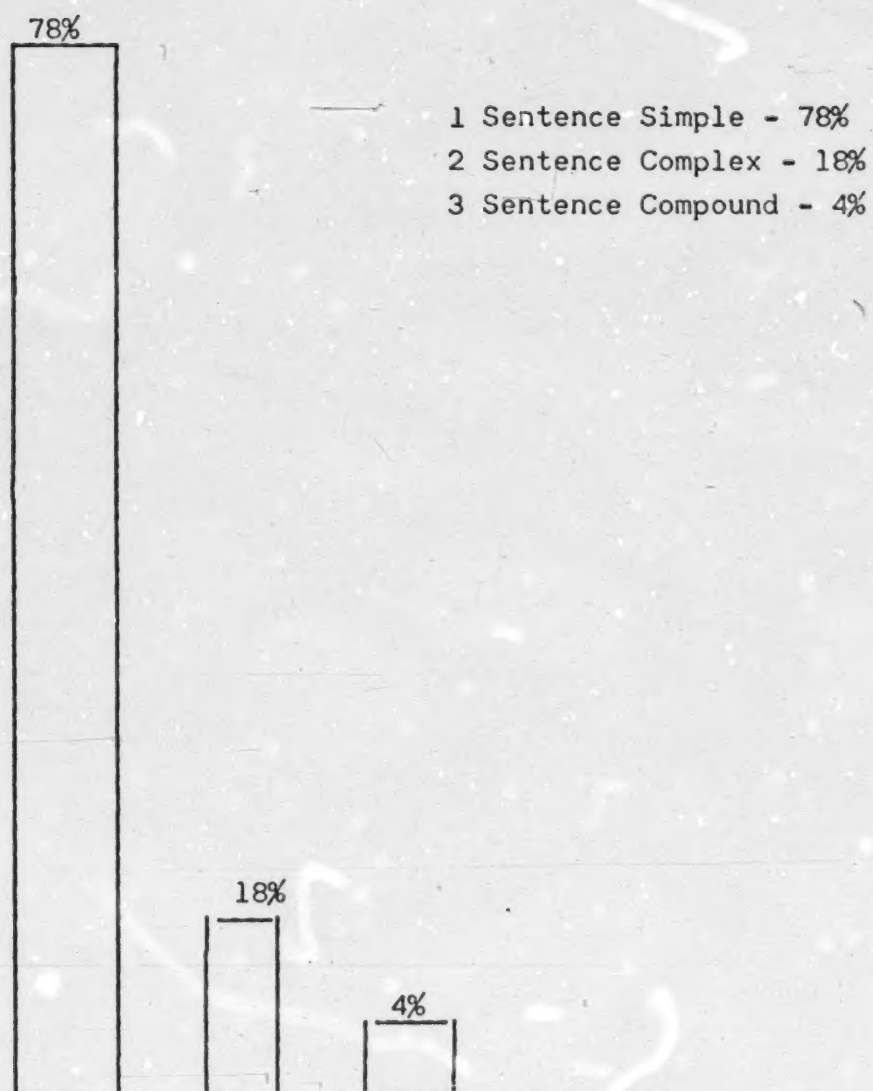


Diagram 7

From Level 1, the discourse level, we would expect to get such register information as whether a variety makes use of a particular type of sentence to the exclusion of others, — for instance, whether it consists solely of 'declarative sentences' to the exclusion of 'imperatives' and 'interrogatives'; or whether it has a high proportion of 'simple sentences', or shows a preference of 'complex sentences'. At Level 2, the sentence level, we will be able to get comparative data on sentence typology and structure. There, we are concerned with the 'placement' or 'ordering' of the clause within a sentence. At Level 3, the clause level, we will be able to get comparative data on clause typology and structure. At this level, we are looking for distinctiveness in a given variety, which involves how linguistic functions within a clause are realised formally, for instance, the proportion of nouns to verbs, the frequency of pronouns as opposed to noun phrases, etc. At Level 4, the phrase level, we will be able to get comparative data on phrase typology and structure for two varieties. For instance, it is easy to see the potential of 'noun phrases' for making register contrasts in terms of complexity, and the potential of 'verb phrases' for making contrasts in the distribution of tense forms. At Level 5, the expressional level, our analysis will yield information on 'frozen expressions', such as two-word verbs, adverbial expressions, etc.

I do not have the space to touch on the various phases of the computer data-processing of the project. The final computer output of the project is scheduled to be completed by the end of this year.

The third of the projects, which are complementary to each other in aim, is designed to contribute to more effective and realistic teaching and learning of the skills of speaking English as a second language. It attempts to show that the comfortable

familiarity native English speakers have with their own language as evidenced by everyday speech is, to some extent, the result of their spontaneous use of a wide variety of ossified expressions.

The analysis of a corpus of over 130,000 words of spoken English, representing the speech of over 300 native-speakers of Canadian English of 40 different occupations collected in 24 situations, when they were conversing on more than 30 different topics, has isolated a range of fixed expressions used for such purposes as capturing attention, holding the floor in conversations, providing encouragement and feedback, recovering from false starts, or simply gaining time to think of what to say next. The findings have been compiled into a 4-volume report by Glenn Barker and Helen Sorhus¹⁶.

But meanwhile I have been given permission to show you the following results as an illustration of the nature of the project. The research results show that native speakers of English use an average of one fixed expression in every five words. The most frequent 19 fixed expressions of the corpus are shown in the following table. The total frequency of these 19 types accounts for 41% of the total occurrences of all fixed expressions in the corpus.

THE FIXED EXPRESSION PYRAMID

The 19 most frequent types represent 41% of all occurrences
fixed expressions

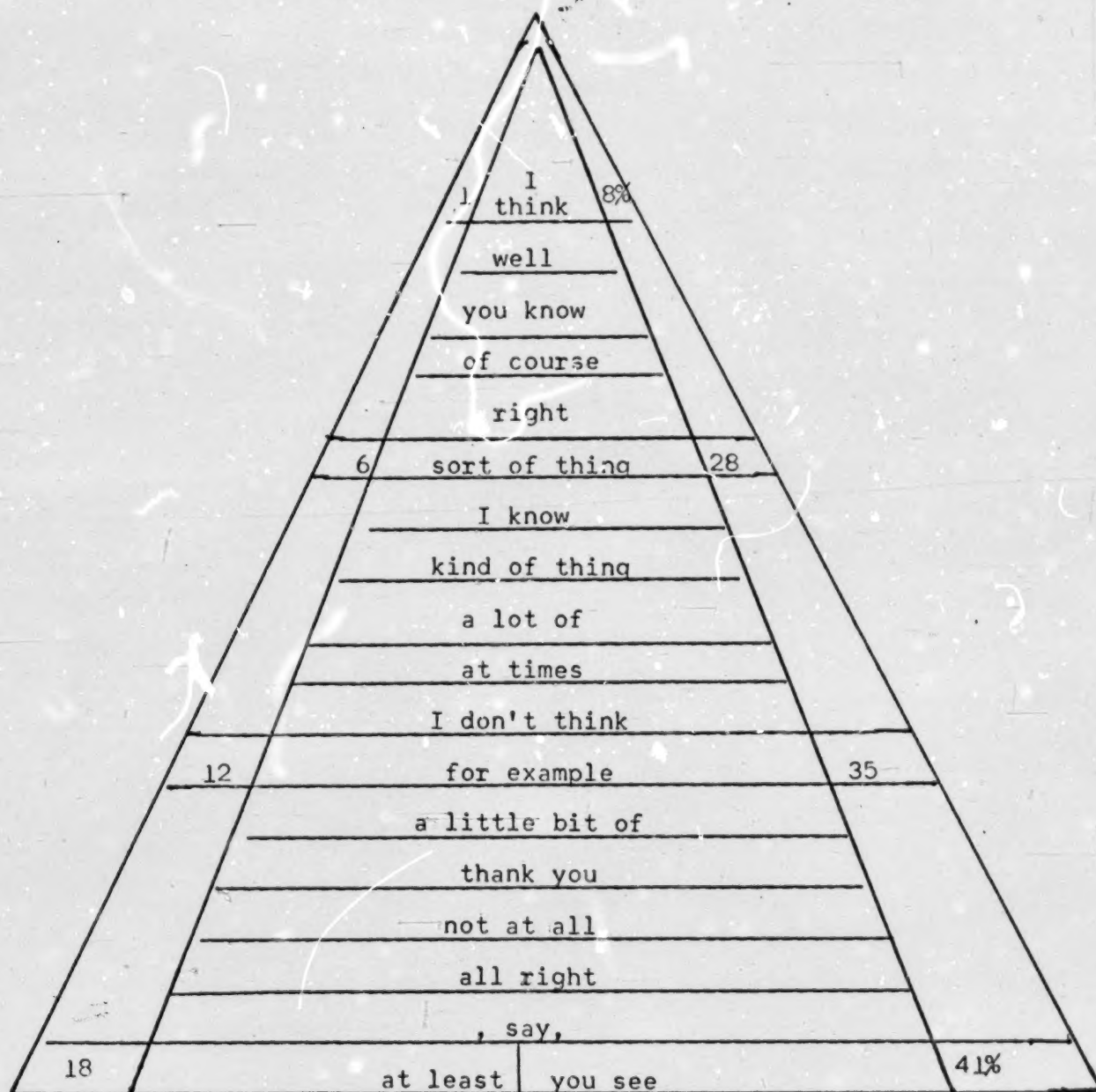


Diagram 8

It is our contention that since fixed expressions are so much a part of the oral performance of native speakers, these expressions should be made available to the second-language learner. Something that has not been done deliberately or consistently enough in the past.¹⁷

The projects highlighted in this report represent some of our research efforts in the field of teaching English as a second language. We hope that the findings will contribute to more comprehensive course-design and more effective teaching.

NOTES

1. Bright, William (ed.) Sociolinguistics, Paris; the Hague: Mouton, 1966

Bernstein, Basil, "Elaborated and restricted codes: their social origins and some consequences" in The Ethnography of Communication (eds) J.J. Gumperz and D. Hymes (Am. Anthropol. Spec. Publ. 3 Menasha: American Anthropological Association,) 1964.

Ellis, J.O. and J.N. Ure "Language Varieties: Register" in Encyclopaedia of Linguistics, Information and Control. Oxford: Pergamon Press, 1969

Gregory, M. "Aspects of Varieties Differentiation" in J. Ling. 3, 1967, pp. 177-197

Fishman, J.A. (ed) Readings in the Sociology of Language, The Hague: Mouton, 1968
(ed) Advances in the Sociology of Language The Hague: Mouton, 1971

2. Stevens, P.D. "Varieties of English" in Papers in Language and Language Teaching (ed.) Stevens, P.D. O.U.P. 1965 p. 74f.

3. Crystal, David "New Perspective for Language Study 1, Stylistics" English Language Teaching Vol. 24, No 2 1970 pp. 99-106

4. Halliday, M.A.K., A. McIntosh and P. Stevens The Linguistic Sciences and Language Teaching London: Longmans, 1964, p. 152.

5. Ellis, J.O. and J.N. Ure, op. cit. p. 354

6. _____ p. 258

7. Crystal, D. and D. Davy: Investigating English Style Longmans, 1969, p. 62.

8. Crystal, D. op. cit. p. 101

9. Chiu, Rosaline K. "Measuring Register Characteristics: A Prerequisite for Preparing Advanced Level TESOL Programs" The TESOL Quarterly, Vol. 6; No. 2, June, 1972 pp. 129-141.

10. Chiu, Rosaline K. "Register Constraints on the Choice of The English Verb" The English Quarterly, Vol. 6 No. 2, August, 1973. pp. 123--137
11. See Chiu, R.K., 1973
12. Pike, Kenneth L. Language in Relation to a Unified Theory of Human Behavior Janua Linguarum, Series Major 24 2nd Revised Edition. The Hague: Mouton.
13. 1.1 +Sentence Interrogative
/Sentence Simple
 - 2.1 Sentence Simple
 - +Clause Independent
 - /Clause Basic
 - 3.1 Clause Basic
 - +Object Direct +Predicate
 - /Pronoun Interrogative /Verbal Expression Compound

+Subject
/Pronoun Personal

+Object
/Phrase Prepositional

 - +Vocative
 - /Noun Proper
 - 4.1 Phrase Prepositional
 - +Initiator of Phrase +Nucleus
 - Prepositional
 - /Preposition /Pronoun Demonstrative
 - 5.1 Verbal Expression Compound
 - +Auxiliary +Nucleus
 - /Verbal Expression & /Verbal Expression
 - Auxiliary
 - 5.2 Verbal Expression Auxiliary 1
 - 5.3 Verbal Expression IV 1
14. 1.1 +Sentence Declarative
/Sentence Simple
 - 2.1 Sentence Simple
 - +Clause Independent
 - /Clause Basic
 - 3.1 Clause Basic
 - +Subject +Predicate
 - /Pronoun Personal /Phrase Verbal
 - +Object Indirect
 - /Phrase Prepositional

4.1 Phrase Verbal

+Semi-Auxiliary
/Verbal Expression Semi-auxiliary Compound

+Nucleus
/Verbal Expression Compound

4.2 Phrase Prepositional

+Initiator of Phrase Prepositional
/Preposition

+Nucleus
/Phrase Nominal

4.3 Phrase Nominal

+Qualifier
/Adjective Indefinite

+Nucleus + Qualifier
/Noun /Phrase Prepositional

4.4 Phrase Prepositional

+Initiator of Phrase
Prepositional
/Preposition

+Nucleus
/Phrase Nominal

4.5 Phrase Nominal

+Qualifier
/Noun

+Nucleus
/Noun

4.6 Phrase Nominal

+Qualifier
/Noun

+Nucleus
/Noun

5.1 Verbal Expression Semi-Auxiliary Compound

+Auxiliary
/Verbal Expression
Auxiliary

+Nucleus
/Verbal Expression
Semi-auxiliary

5.2 Verbal expression Auxiliary 15.3 Verbal expression Semi-auxiliary 25.4 Verbal Expression Compound

+Auxiliary
/Verbal Expression
Auxiliary

+Nucleus
/Verbal Expression II

5.5 Verbal Expression Auxiliary 15.6 Verbal Expression II 2

15. Waaub, Jean-Marie, "Propositions pour une formalisation de la tagmémique d'analyse syntaxique" Exposé donné lors d'un séminaire Belgo-Néerlandais de linguistique mathématique, Printemps, 1971.
16. Barker, G. and H. Sorhus Fixed Expressions, Report to the English Curriculum Division, Language Bureau, Public Service Commission of Canada, 1973
17. See, Barker G. "The Two-Word Verb Matrix: An Aid to the Teaching of Spoken English", forthcoming in Pedagogical Bulletin, Government of Canada,
See, also, Sorhus, H. "To Hear Ourselves: Implications for teaching English as a Second Language", forthcoming in Pedagogical Bulletin, Government of Canada.